Celanese
The chemistry inside innovation™

Zytel® FR7026V0F NC010

NYLON RESIN

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® FR7026V0F NC010 is an unreinforced, flame retardant, heat stabilized, polyamide 66 resin for injection molding. It does not contain elemental phosphorous or heavy metals and uses an halogen free flame retardant package. Non-Chlorine & Non-Bromine Material. Compliant with UL 746H/C-IC

Product information

Resin Identification	PA66-FR(30)	ISO 1043
Part Marking Code	>PA66-FR(30)<	ISO 11469
ISO designation	ISO 16396-PA66,FR(30),M1F1G1NR,S14-040	

Rheological properties

	dry/cond.		
Viscosity number	160 / *	cm^3/g	ISO 307, 1628
Moulding shrinkage, parallel	0.9 / -	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.0 / -	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	3700 / 2000	MPa	ISO 527-1/-2
Tensile stress at yield, 50mm/min	* / 55	MPa	ISO 527-1/-2
Tensile strain at yield, 50mm/min	* / 20	%	ISO 527-1/-2
Tensile stress at break, 5mm/min	81.5 / *[DS]	MPa	ISO 527-1/-2
Nominal strain at break	* / 30	%	ISO 527-1/-2
Tensile strain at break, 5mm/min	4.7 / *[DS]	%	ISO 527-1/-2
Charpy impact strength, 23°C	80 / 110	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	3.5 / 7	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	3 / 2	kJ/m^2	ISO 179/1eA
Izod notched impact strength, 23°C	4.4 / -	kJ/m^2	ISO 180/1A
Ball indentation hardness, H 358/30	- / 110[DS]	MPa	ISO 2039-1
Poisson's ratio	0.36 / 0.4		

[DS]: Derived from similar grade

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Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	260 / *	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80 / 20	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	80 / *	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	230 / *	°C	ISO 75-1/-2
Ball pressure test	220 / -[DS]	°C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel, -40-23°C	60 / *	E-6/K	ISO 11359-1/-2
CLTE, Parallel, 23-55°C(73-130°F)	65 / -	E-6/K	ASTM E 831
Coeff. of linear therm. expansion, parallel, 55-160°C	70 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	70 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, 55-160°C	115 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, Normal,23-55°C (73-130°F)	75 / -	E-6/K	ASTM E 831
Thermal conductivity of melt	0.17	W/(m K)	ISO 22007-2
Specific heat capacity of melt	2590	J/(kg K)	ISO 22007-4
RTI, electrical, 0.75mm	130	°C	UL 746B
RTI, electrical, 1.5mm	130	°C	UL 746B
RTI, electrical, 3.0mm	130	°C	UL 746B
RTI, impact, 0.75mm	95	°C	UL 746B
RTI, impact, 1.5mm	95	°C	UL 746B
RTI, impact, 3.0mm	95	°C	UL 746B
RTI, strength, 0.75mm	110	°C	UL 746B
RTI, strength, 1.5mm	110 / *	°C	UL 746B
RTI, strength, 3.0mm	110	°C	UL 746B

[DS]: Derived from similar grade

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	V-0 / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Burning Behav. at thickness h	V-0 / *	class	IEC 60695-11-10
Thickness tested	0.4 / *	mm	IEC 60695-11-10
UL recognition	yes / *		UL 94
Oxygen index	39 / *	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.4mm	960 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 0.75mm	960 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	960 / -	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	960 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	960 / -	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.5mm	960 / -	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	960 / -	°C	IEC 60695-2-13
FMVSS Class	DNI		ISO 3795 (FMVSS 302)

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Electrical properties

	dry/cond.		
Surface resistivity	*/>1E15[A,1]	Ohm	IEC 62631-3-2
Electric strength	31 / 30	kV/mm	IEC 60243-1
Comparative tracking index	600 / -		IEC 60112
Comparative tracking index, 23 °C	0 / -	PLC	UL 746A

[A]: Assessed

[1]: based on CTI and similar values for FR grades

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	2.5 / *	%	Sim. to ISO 62
Water absorption, 2mm	8 / *	%	Sim. to ISO 62
Water absorption, Immersion 24h	1.8[2] / *	%	Sim. to ISO 62
Density	1160 / -	kg/m³	ISO 1183
Density of melt	1030	kg/m³	

[2]: wall thickness 2mm

VDA Properties

Odour	5	class	VDA 270

Injection

Drying Recommended	yes	
Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.2	%
Melt Temperature Optimum	280	°C
Min. melt temperature	270	°C
Max. melt temperature	290	°C
Screw tangential speed	≤0.2	m/s
Mold Temperature Optimum	70	°C
Min. mould temperature	60	°C
Max. mould temperature	80	°C
Hold pressure range	50 - 100	MPa
Hold pressure time	3	s/mm
Ejection temperature	190	°C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent, Flame retardant, Non-halogenated/Red phosphorous free flame retardant
Special characteristics	Flame retardant

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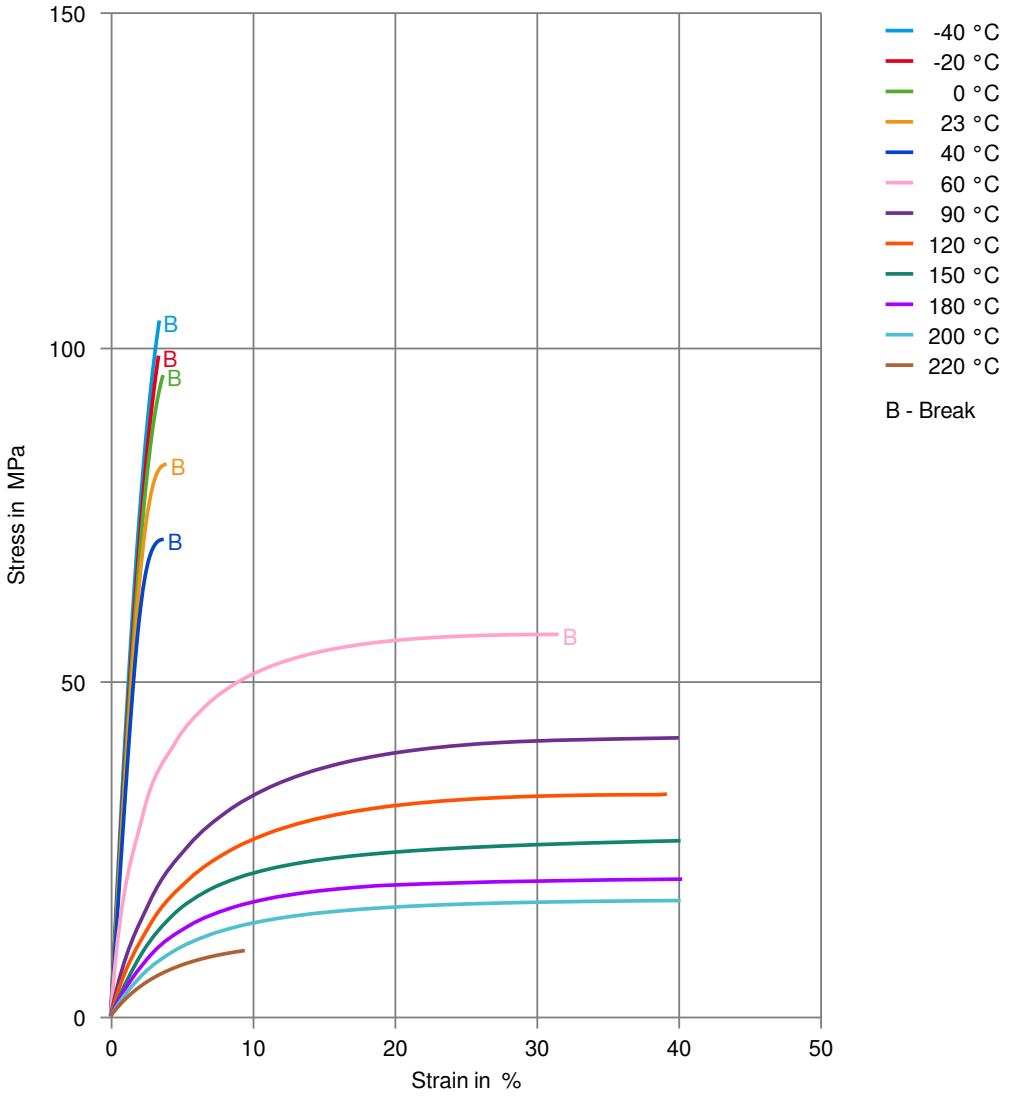
Stress-strain (dry)



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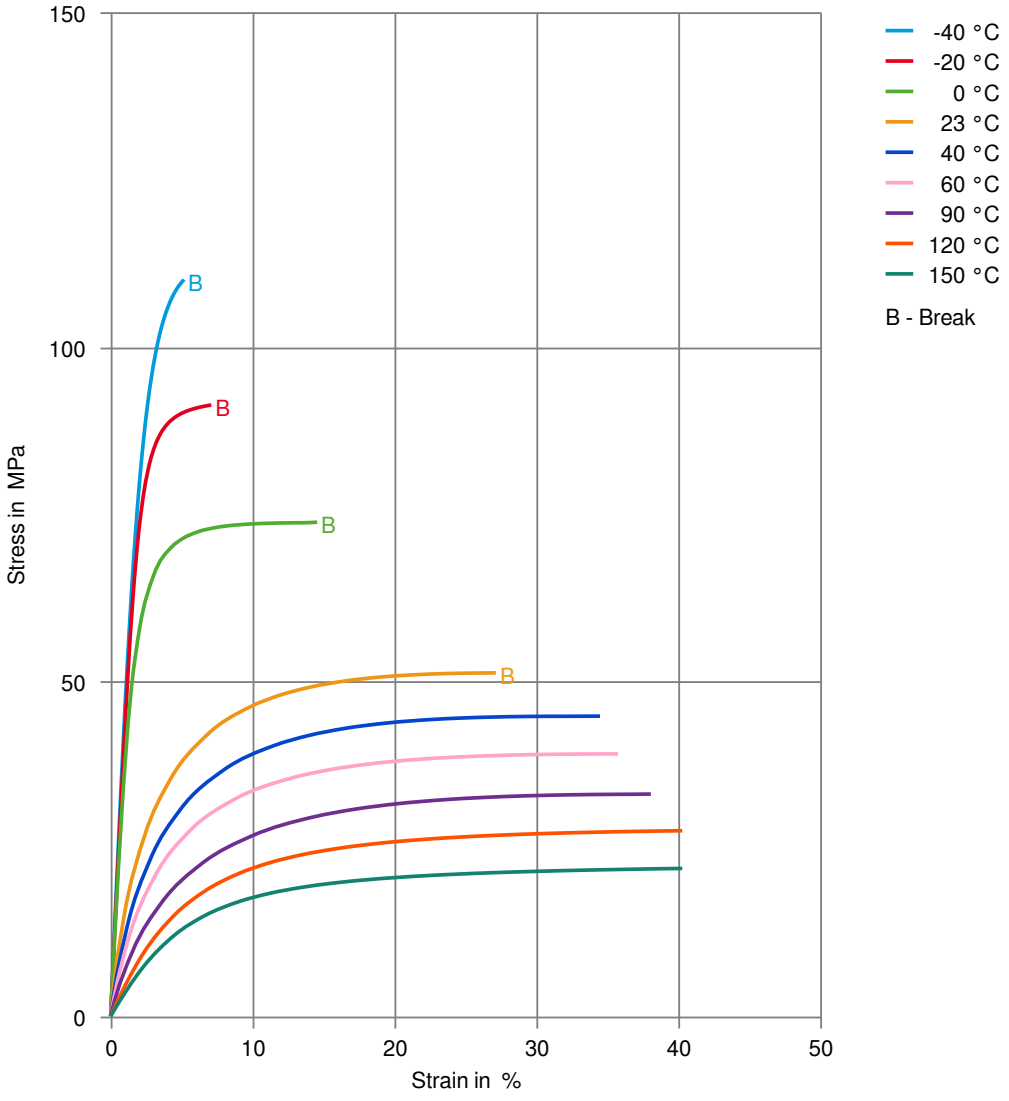
Stress-strain (cond.)



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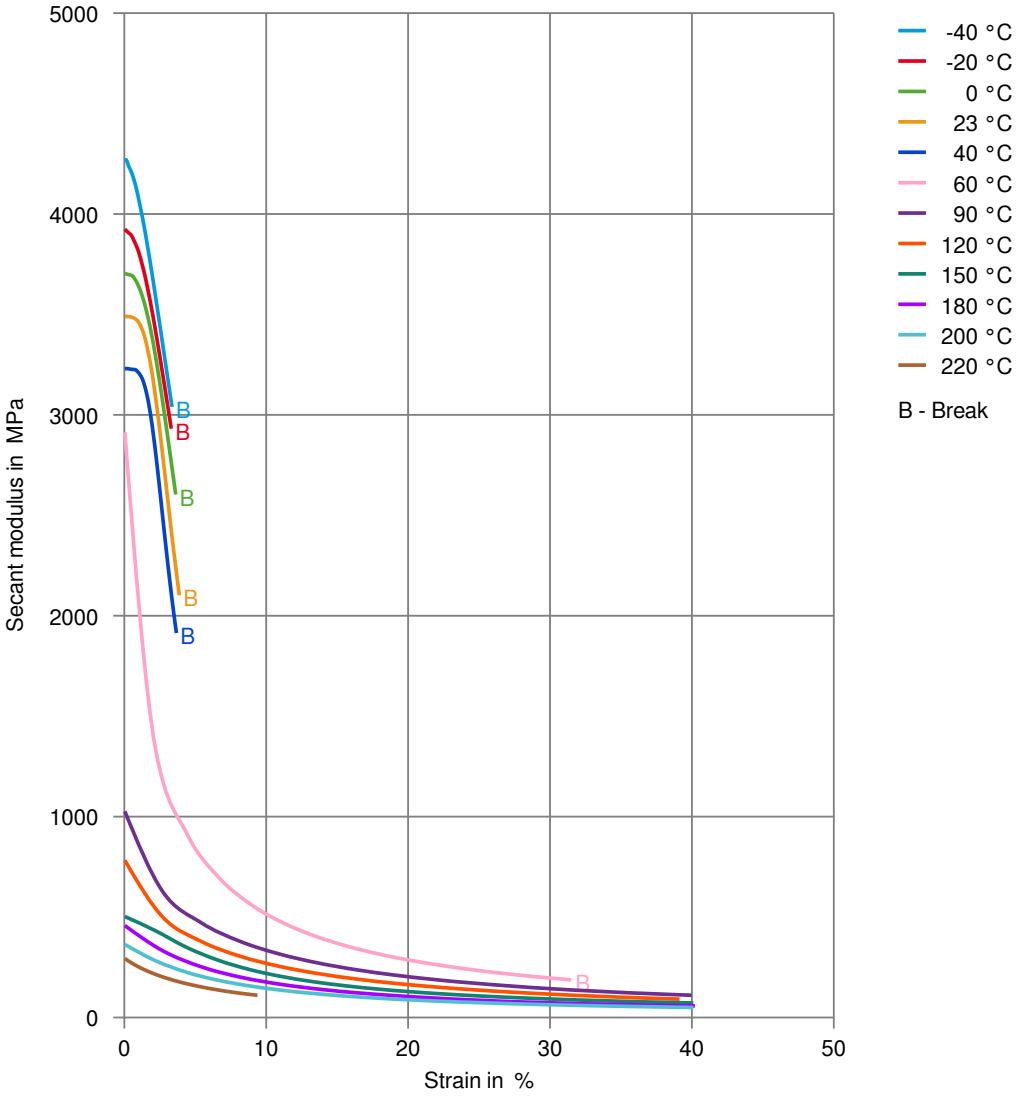
NYLON RESIN

Secant modulus-strain (dry)



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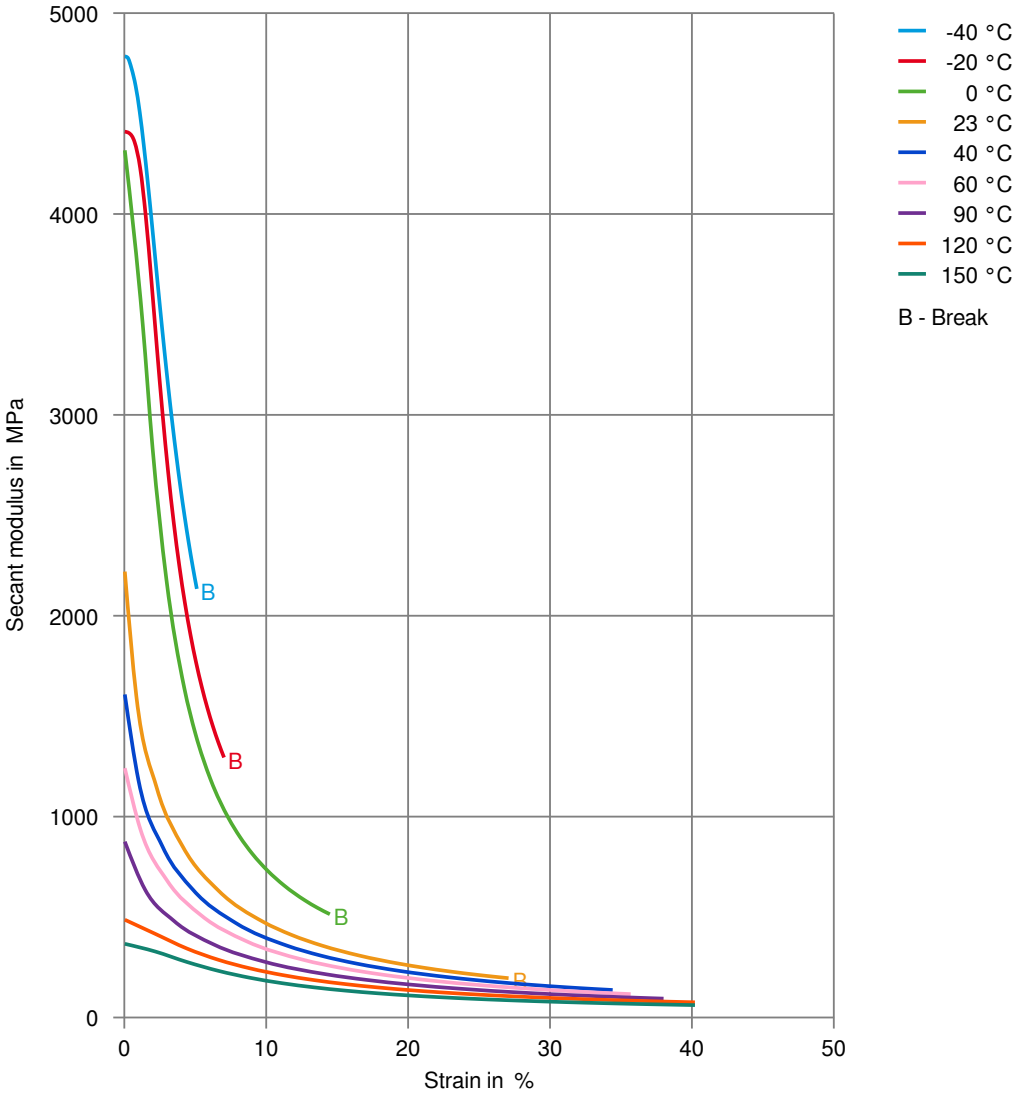
NYLON RESIN

Secant modulus-strain (cond.)



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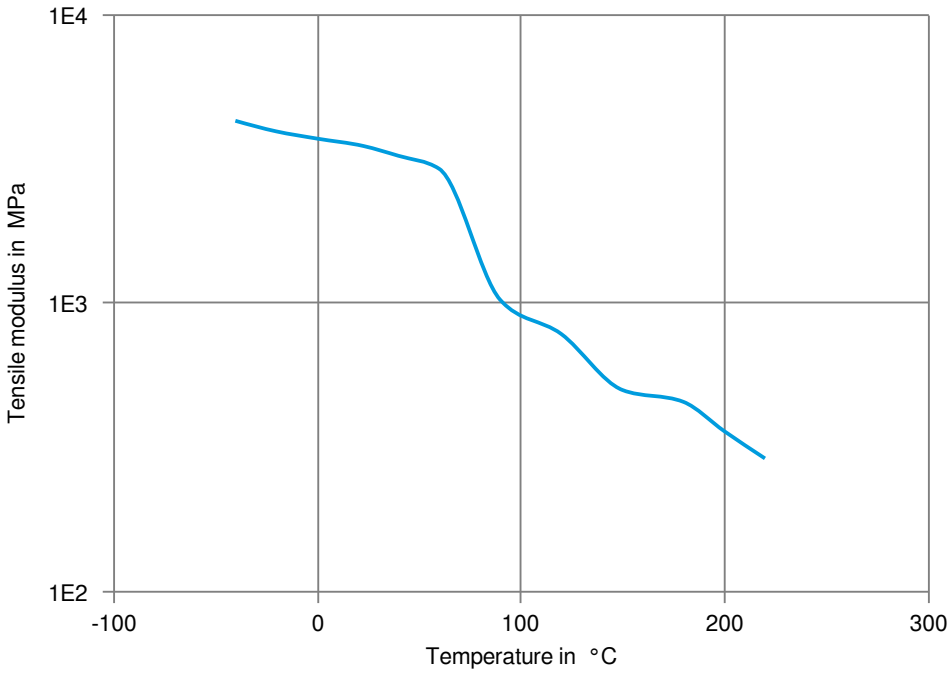
Tensile modulus-temperature (dry)



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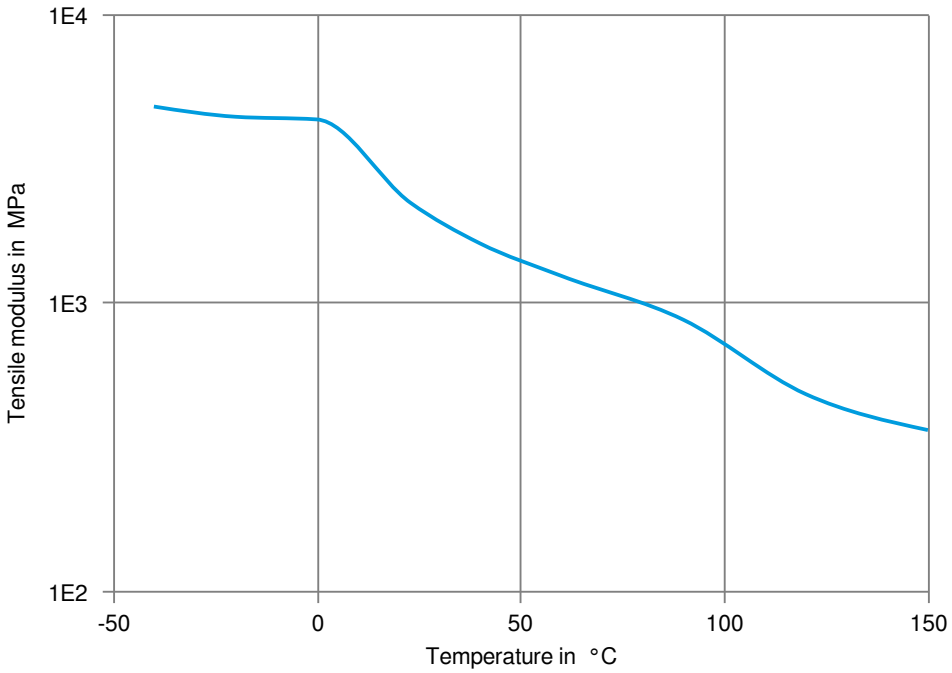
Tensile modulus-temperature (cond.)



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Chemical Media Resistance

Acids

- ✔ Acetic Acid (5% by mass), 23°C
- ✔ Citric Acid solution (10% by mass), 23°C
- ✔ Lactic Acid (10% by mass), 23°C
- ✘ Hydrochloric Acid (36% by mass), 23°C
- ✘ Nitric Acid (40% by mass), 23°C
- ✘ Sulfuric Acid (38% by mass), 23°C
- ✘ Sulfuric Acid (5% by mass), 23°C
- ✘ Chromic Acid solution (40% by mass), 23°C

Bases

- ✘ Sodium Hydroxide solution (35% by mass), 23°C
- ✔ Sodium Hydroxide solution (1% by mass), 23°C
- ✔ Ammonium Hydroxide solution (10% by mass), 23°C

Alcohols

- ✔ Isopropyl alcohol, 23°C
- ✔ Methanol, 23°C
- ✔ Ethanol, 23°C

Hydrocarbons

- ✔ n-Hexane, 23°C
- ✔ Toluene, 23°C
- ✔ iso-Octane, 23°C

Ketones

- ✔ Acetone, 23°C

Ethers

- ✔ Diethyl ether, 23°C

Mineral oils

- ✔ SAE 10W40 multigrade motor oil, 23°C
- ✘ SAE 10W40 multigrade motor oil, 130°C
- ✘ SAE 80/90 hypoid-gear oil, 130°C
- ✔ Insulating Oil, 23°C

Standard Fuels

- ✔ ISO 1817 Liquid 1 - E5, 60°C
- ✔ ISO 1817 Liquid 2 - M15E4, 60°C
- ✔ ISO 1817 Liquid 3 - M3E7, 60°C
- ✔ ISO 1817 Liquid 4 - M15, 60°C
- ✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✔ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✘ Diesel fuel (pref. ISO 1817 Liquid F), >90°C

Salt solutions

- ✔ Sodium Chloride solution (10% by mass), 23°C
- ✘ Sodium Hypochlorite solution (10% by mass), 23°C

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- ✔ Sodium Carbonate solution (20% by mass), 23°C
- ✔ Sodium Carbonate solution (2% by mass), 23°C
- ✘ Zinc Chloride solution (50% by mass), 23°C

Other

- ✔ Ethyl Acetate, 23°C
- ✘ Hydrogen peroxide, 23°C
- ✘ DOT No. 4 Brake fluid, 130°C
- ✘ Ethylene Glycol (50% by mass) in water, 108°C
- ✔ 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✔ 50% Oleic acid + 50% Olive Oil, 23°C
- ✔ Water, 23°C
- ✘ Water, 90°C
- ✘ Phenol solution (5% by mass), 23°C

Symbols used:

✔ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

✘ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).